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The Current Situation and Sustainable Development of Water Resources in China

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Abstract

China is a water shortage country. The paper analyzes the current situation and problems of water resources in both urban and rural areas. To solve the problems, the paper puts forward five countermeasures and draws up structure chart. It shows specific contents and mutual relationships of each countermeasure clearly, and provides the basis for sustainable development of urban and rural water resources. It can be used in engineering practice effectively.

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Keywords: Urban water resources; Rural water resources; the current situation; Sustainable development; Measures

1. Introduction

Water is the source of life, and anyone can't survive without water. However water is not rich in China. Water resources are unevenly distributed in China, more in southeast and less in northwest. The distribution of water within the year and inter-annual is also uneven in China. The seasonal distribution of surface runoff has the character of wet summer, dry winter and transitional spring and autumn, as well as inter-annual variability is larger in north than in south. In recent years, due to the rapid development of economy and the concentration of population, more and more water is needed. Water shortage has seriously hindered the development of economy and brought a lot of inconvenience to people's life.

2. Water resources in China

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2.1. Urban water resources

Cities have dense population and developed industry, so the per capita available freshwater is scarce. Together with water pollution and uncoordinated distribution between water resource and city pattern, urban water shortages have been greatly exacerbated [1]. Because economic development mainly focuses on urban areas, water challenges will greatly revolve in different cities [2].

2.2. Rural water resources

With the constant improvement of China's agriculture, rural water has been exploited and utilized unceasingly. Water supply capacity is also more and more limited [3], and part of farmland suffers drought every year. In 2009, area of crops struck by drought was 29.2588 million hectares around the country. Because of that, grain loss reached 34.849 billion kg [4]. In rural areas, water is used with low efficiency in life and production. In addition, irrigation facilities are not yet perfect and effective irrigation area is less in the plough land. More, rural water is also being polluted. These situations sharpen rural water shortages.

3. Water problems in China

3.1. Water shortage and serious groundwater consumption

Water distribution is not harmonious in space and time and it also doesn't match the distribution of population, land, mineral and productive forces. Due to available water shortage, more and more groundwater is developed. However, groundwater quality is not good now. It aggravates water scarcity, leads to surface subsidence and increase the possibility of natural disasters such as earthquakes [5]. In some coastal areas, seawater invasion has been a serious problem, which threatens people's lives.

3.2. Frequent droughts and floods

China has frequent floods and drought. In the 1990s, successive floods had occurred in our country. Not only flood disaster, the drought also occurs frequently. Disaster area affected by drought has been up to 29.25880 million hm^2 by 2009. This is mainly caused by monsoon climate. Once monsoon is abnormal, precipitation will be also anomalous. Then drought and flood are likely to appear alternately on a wide range.

3.3. Water pollution, soil erosion and ecological deterioration

In china, more and more garbage not only occupy large space, but also breed bacteria. Such bacteria pollute the air and groundwater, and threaten safety of drinking water [6]. Since sewage water is poured directly without treatment and chemical fertilizers are abused in crop production, water quality has been in severe situation. At the same time, the soil erosion amounts to 5 billion t every year; Grassland desertification and degradation problems have become more and more serious; Groundwater has been over-exploited, then parts of regions have produced some phenomenon like ground settlement and sea water encroachment, and so on; A number of lakes shrink and mud flats disappear, which caused water storage capacity and water self-purification to decrease and aggravated water quality deterioration.

3.4. Inefficient water using and water waste

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